2/2 010 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0123546

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE COHERENT EXCITATION OF COUPLED MAGNETOACOUSTICAL OSCILLATIONS IN FERROMAGNETIC CRYSTALS NEAR THE CRITICAL POINT, IN WHICH THE CHARACTER OF THE MAGNETIC ANISOTROPY CHANGES, IS INVESTIGATED. THE INCREMENTS OF THE INCREASE IN THE OSCILLATIONS ARE DETERMINED. IT IS SHOWN THAT THESE INCREMENTS CAN BE CONSIDERABLY LARGER THAN THE INCREMENTS OF THE INCREASE OF SPIN WAVES IN ORDINARY FERROMAGNETICS. FACILITY: PHYSICS ENGINEERING INSTITUTE OF THE UKRAINIAN ACADEMY OF SCIENCES, KHAR'KOV.

UNCLASSIFIED

USSR UDC 621.357.7.035.4:669.738.7(088.8)

AZHOGIN, F. F., LOGACHEVA, Z. V., PRIBYLOVA, L. I., VLASOVA, L. P., and AGEYEVA, N. I.

"An Electrolyte for Cadmium Plating"

Author's Certificate No 346390, filed 10 Sep 70, published 2 Aug 72 (from Referativnyy Zhurnal -- Khimiya, No 8(II), 1973, Abstract No 8L307P)

Translation: An ammonium chloride electrolyte is patented for cadmium plating. It is improved in that in order to prevent the hydrogenation of the base metal, ethylene glycol is added, resulting in the following composition, in g/liter: $CdCl_2$, 40-50; NH_4Cl, 230-280; ethylene glycol, 30-40, carpenter's glue, 1-2; an optimum pH of the electrolyte of 2.5-3.5; D_k less than 2 amps/decimeter^2, and a theoretical yield of 100%. For example, samples from the steel EI-643 having a notch r=0.1 mm is plated with cadmium in our electrolyte having the following composition, in g/liter: $CdSO_4$, 50; NH_4Cl, 250; ethylene glycol, 30; carpenters glue, 2; at pH of 3.0 and a D_k 2 amps/decimeter^2 for a thickness of 10 microns. Without subsequent heating at a tension equal to 90% of the strength of the notched sample (the Stress equals 216 kg/m^2), the plated sample did not fracture after 200 hours.

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USSR

UDC 620.194

AZHOGIN, F. F., and SAMOYLOV, A. I.

"Effect of Internal Stresses on the Corrosion Cracking of High-Strength Steels"

Moscow, Zashchita Metallov, Vol 7, No 4, Jul-Aug 71, pp 444-445

Abstract: The quantitative relationship between the resistance to corrosion cracking and the magnitude of internal stresses was experimentally investigated on specimens of 30KhGSNA high-strength steel. The specimens were tested by different tensile stresses in H_2SO_4(20%) + NaCl(30 g/l) and in a tropical chamber. The stresses were determined according to their diffraction line shifting relative to a calibrating device. The test results show that the corrosion cracking resistance of 30KhGSNA steel increases with increasing compression stress and decreasing internal tensile stress. The determined linear dependence of the long-term corrosion strength σ_{cr} on the magnitude of internal stresses σ_{int} is in accordance with concepts on the corrosion cracking mechanism characterized by $\sigma_{cr} = \frac{V - k\sigma_{int}}{c}$, where V, k., and c are constants. One illustr., one table, ten biblio. refs.

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USSR UDC: 517.9:539.3

MAMATURDIYEV, G., AZHYMUDINOV, T.

"On the Orthogonality of Eigenfunctions of the Second Boundary Value Problem of Elasticity Theory"

V sb. Krayev. zadachi dlya differents. uravneniy s chastnymi proizvodnymi (Boundary Value Problems for Differential Equations With Partial Derivatives--collection of works), Tashkent, "Fan", 1970, pp 126-131 (from RZh--Matematika, No 5, May 71, Abstract No 5B511)

Translation: By the use of Green's formula and algebraic equations, it is shown that

$$\int_{\Omega} \operatorname{div} \overline{W}_i \operatorname{div} \overline{W}_k d\Omega = 0, \quad i \neq k,$$

if $\overline{W}_i$ and $\overline{W}_k$ are eigenfunctions of the boundary value problem

$$\Delta \overline{W} + \omega \operatorname{grad} \operatorname{div} \overline{W} = 0, \quad 2 \frac{\partial \overline{W}}{\partial n} + (\omega - 1) \overline{n} \operatorname{div} \overline{W} + [\overline{n}, \operatorname{rot} \overline{W}]|_{\Gamma} = 0,$$

where Ω is a finite region of three-dimensional space, Γ is its sufficiently smooth boundary with outer normal n, and $\overline{W}$ is the displacement vector.
V. Buyvol.

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USSR

UDC: 621.375.121

LEKISHVILI, K. M., AZIDZIGURI, A. A., KHAZARADZE, O. L., GEDEVANISHVILI, G. S., ANDREYEVSKIY, YU. S., PEREGUDOV, V. P., Tbilisi Department, Electrotechnical Scientific Research Institute

"A Transistorized Wide-Band Nanosecond Pulse Amplifier"

Moscow, Pribory i Tekhnika Eksperimenta, No 2, Mar/Apr 70, pp 129-131

Abstract: A wide-band nanosecond pulse amplifier is described with a gain of 40 DB, a frequency band of 10-120 MHz, nonuniformity of no more than 1.5 DB in frequency response, sensitivity of 0.5 mV, signal-to-noise ratio of 25, input impedance of 75 ohms, and output impedance of 50 ohms. The proposed amplifier may be used in time-interval selector circuits, time-amplitude converters, nuclear radiation detectors (where it is used as a preamplifier), time and amplitude devices, etc.

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A

Semiconductors and Transistors

USSR UDC 621.315.592

KUSTOV, V.G., ORLOV, V.P., PRESNOV, V.A., and AZIKOV, E.S.

"Spectral Photosensitivity of Nonuniform Semiconductors"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 4, No 4, 1970, pp 669-672

Abstract: This paper considers the problem of the proper approach to the question of semiconductors with nonuniform distribution of recombination parameters over the crystal volume. In deriving the basic relationships for this situation, the authors assume that there is a clearly expressed monopolar photoconductivity in which monopolar diffusion does not play an important part in the formation of the photoconductivity spectrum. Since there is no bipolar diffusion, the diffusion and drift process limited to the surface are negligibly small. They assume further that the specimen under consideration has a laminar nonuniformity in the direction of generation, with each layer having a specified relaxation time for nonequilibrium majority carriers and a specified absorption factor. The results of computations made from an equation they derive are compared with the experimentally obtained photoconductivity spectrum for GaAs at 77° K; the two are found to agree. The authors conclude that for specimens less than 0.01 cm thick, the probability of the formation of clearly expressed nonlinearities in the photoconductivity spectrum due to local non-

USSR A UDC 621.382.002

MAMONTOV, A. P., BALYUBA, V. I., SHIROKOV, L. L., AZIKOV, B. S.

"Diffusion of Magnesium into Gallium Arsenide Through Films of Silicon Dioxide"

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Translation: The diffusion coefficient of magnesium in a SiO_2 film was determined and also the effect of a SiO_2 film on the surface concentration of magnesium in gallium arsenide. Specimens were used of n--GaAs(111), n--1. 10^{17} cm^{-3}, mobility 4100 $cm^4/v.sec$. Diffusion of the magnesium was conducted at 900, 1000, and 1100° C with equilibrium of the pressure of arsenic vapors and concentration of the magnesium in the vaporous phase of 5.10^{17} cm^{-3}. The protective properties of the SiO_2 film were recorded by the presence of p-n junctions in the gallium arsenide under the SiO_2 film. The diffusion coefficient of magnesium in the SiO_2 film is equal to 1/2

USSR

MAMONTOV, A. P., et al, V sb. Arsenid galliya. Vyp. 2, Tomsk, Tomsk University, 1969, pp 203-204 (from RZh-Elektronika i yeye primeneniye, No 4, Apr 70, Abstract No 43343)

$2.4 \cdot 10^{-15}$ cm^2/sec at 900° C, $6.5 \cdot 10^{-15}$ cm^2/sec at 1000° C, and $1.6 \cdot 10^{-14}$ cm^2/sec at 1100° C. The dependence of the diffusion coefficient of magnesium on the temperature $D = 6.1 \cdot 10^{-4} \exp(-2.4/kT) cm^2 \cdot sec^{-1}$. The change of the surface concentration of magnesium as a function of the thickness of the SiO_2 film was investigated (with an increase of the film thickness to 0.3 micron, the concentration decreased by one order of magnitude). The small diffusion coefficient in the SiO_2 can be connected with the formation of glass at the film surface. 7 ref. I.B.

2/2

1/2 034 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--DISTRIBUTION OF RADIATION DEFECTS IN GALLIUM ARSENIDE DURING PROTON IRRADIATION -U-

AUTHOR-(04)-OKUNEV, V.D., MAMONTOV, A.P., ZAKHAROV, B.G., AZILOV, B.S.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(1), 101-5

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--RADIATION DAMAGE, GALLIUM ARSENIDE, PROTON BOMBARDMENT, CRYSTAL LUMINESCENCE, IMPURITY CENTER, RADIATION INTENSITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1983/1708 STEP NO--UR/0449/70/004/001/0101/0105

CIRC ACCESSION NO--AP0054550

UNCLASSIFIED

2/2 034 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0054550

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DISTRIBUTION OF RADIATION DEFECTS IN GAAS DURING PROTON IRRADN. WAS OBTAINED FROM THE DEPENDENCE OF THE DISTRIBUTION OF LUMINESCENCE INTENSITY ON THE ENERGY (2-5 MEV) AND THE DOSE (4.17 TIMES 10 PRIME10-4.17 TIMES 10 PRIME12 PROTONS-CM PRIME2) OF PROTONS. THE DISTRIBUTION OF THE LUMINESCENCE INTENSITY OVER THE CRYSTAL DEPTH WAS MEASURED BY MEANS OF AN ELECTRON MICROPROBE. THE EXPTL. VALUES OF THE DEPTH OF PROTON PENETRATION ARE IN GOOD AGREEMENT WITH CALCD. ONES. THE MAGNITUDE OF THE CHANGE OF THE LUMINESCENCE INTENSITY DURING PROTON IRRADN. DEPENDS ON THE TYPE AND CONCN. OF IMPURITIES IN GAAS. FOR TE DOPED GAAS, THE INTENSITY CHANGE OBTAINED IS EXPLAINED AS DUE TO THE FORMATION OF COMPLEXES LIKE GA SUB2 V SUBGA TE SUB3 (V SUBGA IS A GA VACANCY).

UNCLASSIFIED

USSR

UDC 621.357.7.035.4:669.738.7(088.8)

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USSR

UDC 620.194

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1/1

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002200220018-4"

USSR UDC: 517.9:539.3

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V. Buyvol.

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USSR

UDC: 621.375.121

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A

Semiconductors and Transistors

USSR UDC 621.315.592

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USSR A UDC 621.382.002

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USSR

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2/2

UNCLASSIFIED PROCESSING DATE--16OCT70

1/2 034

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COUNTRY OF INFO--USSR

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CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

STEP NO--UR/0449/70/004/001/0101/0105

PROXY REEL/FRAME--1983/1700

CIRC ACCESSION NO--AP0054550

UNCLASSIFIED

2/2 034 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0054550

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UNCLASSIFIED

USSR UDC 632.951

DERYABIN, V. I. and AZIMBEGOV, N., Samarkand Experimental Station of the Union Scientific Research Cotton Institute

"Effectiveness of Some Acaricides Against the Cobweb Tick on Cotton"

Moscow, Khimiya v Selskom Khozyaystve, Vol 9, No 3, 1971, pp 41-42

Abstract: Several preparations were tested: a 30% emulsion concentrate of methylmercaptophos (etalon) alone and in a mixture with a 50% emulsion concentrate of synerphos (a synergist for methylmercaptophos), a 40% emulsion concentrate of kilval, and a 50% wetted powder of milbeks. In addition to the effectiveness of these preparations, the duration of their protective effect was studied. The experiments showed that a 1:1 mixture of methylmercaptophos and synerphos protected cotton plants against the cobweb tick for 40 days or more, whereas methylmercaptophos alone had a protective effect of only 20 days. Kilval repressed development of the cobweb tick for 20 days. When the doses were increased to 1.5 kg/hectare, the protective effect was prolonged to 25-30 days; and with doses of 2.5 kg/hectare, the protective effect lasted 40 days. No scalding of leaves or other negative effects were observed with cotton plants sprayed with kilval. The preparation could be mixed with water in any desired ratio, it could be stored over

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002200220018-4"

USSR

DERYABIN, V. I. and AZIMBEGOV, N., Khimiya v Sel'skom Khozyaystve, Vol 9, No 3, 1971, pp 41-42

a wide atmospheric temperature range from 15 to 38°C. Milbeks protected cotton against the cobweb tick for 20 days when it was used in an amount of 1 kg/hectare, for 25 days when it was used in an amount of 1.5 kg/hectare, for 35 days when it was used in an amount of 2.0 kg/hectare. Milbeks is preferred over methylmercaptophos because it is less toxic and does not scald the leaves of the plant. Moreover, milbeks attacks the eggs and larvae of the cobweb tick. Milbeks can be applied only with ground machinery. It is therefore recommended to apply it in limited areas (gardens, orchards, etc) where use of methylmercaptophos is prohibited.

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USSR

UDC: 623.681.142.652.659:539.293.535.215.12

AZIMKHODZHAYEV, Kh. E. and GOLYNAYA, G. I.

"Obtaining Memory Elements Capable of Room Temperature Operation on the Basis of the Residual Conductivity Phenomenon"

Kiev, Poluprovodnikovaya tekhnika i mikroelektronika, No. 4, 1970, pp 5-10

Abstract: Residual photoconductivity is defined here as the half-dark conductivity remaining in semiconductors after excitation by light ceases ends. Since it is on the extent of this residual photoconductivity that the effectiveness of the semiconductor as a memory element depends, the authors clarify the conditions under which the residual conductivity is retained for a long time in monocrystalline cadmium sulphide at room temperatures. Their experiments were performed with crystals obtained from the vapor phase. The crystals were highly resistive, were given a mirror-smooth surface, and did not exceed the dimensions of 0.2X0.1X0.01 cm^3. The residual conductivity, with a duration sufficient to attain photocurrent saturation after cutoff of the excitation light, was measured by an electrometric amplifier, within the limits of 10^{-3} to 10^{-12} A, under potentials of 1-5 V. The authors conclude that, to obtain elements with long residual conductivity, the

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USSR

AZIMKHODZHAYEV, Kh. E., et al, Poluprovodnikovaya tekhnika i mikroelektronika, No. 4, 1970, pp 5-10

crystal surface should have its bending zone enriched either by the effect of the field or by surface doping with an indium donor impurity. A table showing the effects of using various dry gases such as air, oxygen, hydrogen and vacuum in making the crystals is given.

2/2

UDC: 681.32.001

USSR

AZIMKHODZHAYEV, Kh. E., GOLYNNAYA, G. I.

"The Production of Memory Elements Capable of Operating at Room Temperatures Based on the Phenomenon of Residual Photoconductivity"

Poluprovodn. Tekhn. i Mikroelektronika. Resp. Mezhved. Sb. [Semiconductor Technology and Microelectronics. Republic Interdepartmental Collection], No 4, 1970, pp 5-10 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, 1970, Abstract No 10B88, by T. R.)

Translation: The kinetics of the quasi-dark (residual) photoconductivity in CdS monocrystals are studied at room temperature under ordinary conditions and when an external, constant, transverse electric field is applied to the crystal in the field effect enriching mode, when the surface of the crystal is alloyed with a thin layer of various metals (indium, gallium, aluminum, gold, silver, etc.). The influence of the surrounding medium on the kinetics of the drop in photoconductivity is studied. In the enriching mode and with alloying of the surface with indium, the kinetics of photoconductivity are strongly elongated and the decay time is increased by 10^2-10^4 times, reaching several hours.

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USSR

AZIMKHODZHAYEV, Kh. E., Golynnaya, G. I., Poluprovodn. Tekhn. i Mikroelektronika. Resp. Mezhved. Sb. [Semiconductor Technology and Microelectronics. Republic Interdepartmental Collection], No 4, 1970, pp 5-10 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, 1970, Abstract No 10B88, by T. R.)

Memory elements with these characteristics, capable of operating at room temperature can be made. Possible mechanisms explaining the conditions under which this anomalously long relaxation time of quasi-dark conductivity arises are discussed. Two illustrations, 19 biblio. refs.

2/2

USSR UDC 615.779.9:582.288

ASKAROVA, S. A., KHODZHIBAYEVA, S. M., and AZIMKHODZHAYEVA, M. N.,
Department of Microbiology, Academy of Sciences Uzbek SSR

"The Effects of Polyene Antibiotics on the Production of Toxic Substances by Verticillium Dahliae Fungus"

Tashkent, Uzbekskiy Biologicheskiy Zhurnal, No 5, 1971, pp 60-61

Abstract: The toxin which is secreted by Verticillium dahliae fungus and which causes wilt of cotton and other plants is composed of several fractions, the most toxic one being the brown pigment. Polyene antibiotics obtained from Actinomycetes neutralize that toxin. Antibiotic 2,949 reduces the activity of the various fractions without suppressing production. Antibiotics 18-80 and 18-45 inhibit both the activity and production of all fractions. The best results are obtained with a mixture of all three antibiotics which totally inactivates the V. dahliae toxin. Cotton plants treated with the mixture develop no wilt.

1/1

Plant Pathology

USSR

UDC 632.4:633.11:577.15

AZIMOV, A. S., All Union Order of Lenin and Order of the Red Banner of Labor Institute of Selection and Genetics

"The Effect of Gamma Irradiation on Wheat Resistance to Smut and Stem Rust"

Tashkent, Uzbekskiy Biologicheskiy Zhurnal, No 4, 1971, p 73

Translation: Ionizing radiation is now widely used by plant breeders to increase the resistance of plants to various diseases. We used it to induce phenotypic changes in plant resistance during the year of exposure and to study the residual effect in the first seed generation. We used seeds of the soft winter wheat varieties Odesskaya 3 and Odesskaya 16 and the winter durum wheat variety Michurinka. Dry seeds were irradiated 3 days before planting with Co^{60} gamma-rays at 1,000, 5,000, 10,000, and 15,000 r and at a dose rate of 400 r/min. Nonirradiated seeds were the control. Field experiments were carried out for two years on a phytopathology test plot with artificial infection. In the experiments with smut, the seeds were irradiated and then exposed to Tilletia tritici spores collected from a local population. In the variations with stem rust, the seeds were irradiated and then planted in a rust nursery. During the booting stage the plants were infected with spores of Puccinia graminis race 21 at the rate of 10 mg of

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002200220018-4"

USSR

AZIMOV, A. S., Uzbekskiy Biologicheskiy Zhurnal, No 4, 1971, p 73

spores per m^2. The experiments were performed six times.

Injury by smut was assessed by counting the healthy and diseased ears, while the degree of injury caused by stem rust was determined from Peterson's international scale. In the experiments with the residual effect of gamma irradiation, the offspring were sown the following year without being irradiated. The 2-year study showed that shoots of the experimental plants irradiated at 1,000, 5,000, and 10,000 r were the same as in the control, but were more sparse at 15,000 r. Low doses of radiation intensified growth and the absolute weight of the seeds harvested increased by 1 to 1.5 g. After irradiation at 5,000 and 10,000 r the susceptibility of wheat to smut decreased substantially.

The incidence of stem rust after irradiation decreased sharply in all the experimental variations except when the 15,000 r dose was used. At 5,000 and 10,000 r the disease rate was almost half that in the control.

The residual effect of irradiation in reducing the incidence of wheat smut and stem rust was insignificant. For example, in the experiment with smut, the disease rate among seeds of the 1965-1966 harvest (not irradiated before

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USSR

AZIMOV, A. S., Uzbekskiy Biologicheskiy Zhurnal, No 4, 1971, p 73

planting) was 23.0% in the variation with the 5,000 r dose, 26.0% with the 10,000 r dose, and 26.3% in the control.

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USSR

BABKO, L. D., YEVLADENKO, V. N. UDC: 8.74

"Automated System for Syntactical Testing of Responses of 'Recognizer' Students"

Mat. i Inform. Probl. Prognozir. i Upr. Naukoy [Mathematics and Information Problems in Prediction and Control of Science--Collection of Works], Kiev, 1971, pp 165-172 (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V556, by V. Utkin)

Translation: The component parts of the "recognizer" system are defined: a recoder, models of automatic systems for syntactical checking of answers, including a model of an alpha-recognizer of syntactical correctness of students' answers, and an error locator. The system runs on the VESM-6 computer, occupies approximately 1000 words of memory and checks an average of 8000 symbols per second. A grammatical system describing one version of ALGOL-60 is presently connected to it.

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USSR

BABKO, L. D.

UDC 3.74

"Some Problems of Error Location in Sentences of Formal Languages"

V sb. Teoriya yazykov i metody postroyeniya sistem programmir. (Language Theory and Methods of Constructing Programming Systems--collection of works), Kiev-Alushta, 1972, pp 346-356 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V464)

Translation: Methods are proposed for monitoring the sentences of formal languages permitting detection of syntactic errors in the controlled sentence. The idea of the methods consists in more precise definition of the error concept. The basis for the error concept is the concept of an inadmissible sequence satisfying a simple structural condition. The properties of the proposed methods are presented. It is demonstrated that one of the proposed methods can detect all of the errors in sentences before introducing any changes in the sentences. It is also demonstrated that the monitoring techniques are partial error location techniques and therefore these methods cannot always detect all the errors before introducing corrections into the controlled sentence. It is noted that the discussed methods can be used for syntactic monitoring of programs and the control of trainee responses. In the case of syntactic control the formal language errors are interpreted as syntactic errors. In the case of

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BABKO, L. D., Teoriya yazykov i metody postroyeniya sistem programmir., Kiev-Alushta, 1972, pp 346-356

monitoring the answers of trainees, the controlled sentence is interpreted as the answer of the trainee and the formal language, as the set of all correct answers to the given question. The error in the formal language is interpreted as the error in the trainee response.

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USSR

UDC 51.801

BABKO, L. D., STAROVOYTOV, L. N.

"An Algorithm for Syntactic Monitoring of the Responses of Trainees"

V sb. Mat. i inform. probl. prognozir. i upr. naukoy (Mathematical and Information Problems of Forecasting and Control of Science -- collection of works), Kiev, 1971, pp 173-183 (from RZh-Kibernetika, No 9, Sep 72, Abstract No 9V702)

Translation: In this paper an algorithm is proposed for monitoring whether α belongs to a language generated by G by the given pair (α, G) where α is a sentence (the monitored response) and G is a grammar. The region of application of the algorithm includes the set of all context-free languages of practical importance.

The version of the algorithm executed on the BESM-6 computer permits a set of pairs (α_i, G_i) with a total sentence length of 3,000 to 5,000 symbols to be monitored in one second.

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USSR

DERYABIN, V. I. and [illegible], N., Khimiya v Sel'skom [illegible], Vol [illegible], No 3, 1971, pp 41-[illegible]

a wide atmospheric temperature range from 15 to [illegible]°C. Milbeks protected cotton against the [illegible] tick for [illegible] days when it was used in an amount of 1 kg/hectare, for 2[illegible] days when it was used in an amount of [illegible] kg/hectare, for 35 days when it was used in an amount of 2.0 kg/hectare. [illegible] is preferred over methylmercaptophos because it is less toxic and does not [illegible] the leaves of the plant. Moreover, milbeks attacks the [illegible] and larvae of the cobweb tick. Milbeks can be applied only with ground machinery. It is therefore recommended to apply it in limited areas ([illegible]) where use of [illegible] is prohibited.

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USSR UDC 623.681.142.652.659:539.293.535.215.12

AZIMKHODZHAYEV, Kh. E. and GOLYNAYA, G. I.

"Obtaining Memory Elements Capable of Room Temperature Operation on the Basis of the Residual Conductivity Phenomenon"

Kiev, Poluprovodnikovaya tekhnika i mikroelektronika, No. 4, 1970, pp 5-10

Abstract: Residual photoconductivity is defined here as the half-dark conductivity remaining in semiconductors after excitation by light pulses ends. Since it is on the extent of this residual photoconductivity that the effectiveness of the semiconductor as a memory element depends, the authors clarify the conditions under which the residual conductivity is retained for a long time in monocrystalline cadmium sulphide at room temperatures. Their experiments were performed with crystals obtained from the vapor phase. The crystals were highly resistive, were given a mirror-smooth surface, and did not exceed the dimensions of 0.2X0.1X0.01 cm^3. The residual conductivity, with a duration sufficient to attain photocurrent saturation after cutoff of the excitation light, was measured by an electrometric amplifier. Within the limits of [illegible] V. The authors conclude

[illegible]

USSR

AZIMKHODZHAYEV, Kh. E., et al, Poluprovodnikovaya tekhnika i mikroelektronika, No. 4, 1970, pp 5-10

crystal surface should have its bending zone enriched either by the effect of the field or by surface doping with an indium donor impurity. A table showing the effects of using various dry gases such as air, oxygen, hydrogen and vacuum in making the crystals is given.

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USSR

UDC: 681.32.001

AZIMKHODZHAYEV, Kh. E., GOLYNNAYA, G. I.

"The Production of Memory Elements Capable of Operating at Room Temperatures Based on the Phenomenon of Residual Photoconductivity"

Poluprovodn. Tekhn. i Mikroelektronika. Resp. Mezhved. Sb. [Semiconductor Technology and Microelectronics. Republic Interdepartmental Collection], No 4, 1970, pp 5-10 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, 1970, Abstract No 10B88, by T. R.)

Translation: The kinetics of the quasi-dark (residual) photoconductivity in CdS monocrystals are studied at room temperature under ordinary conditions and when an external, constant, transverse electric field is applied to the crystal in the field effect enriching mode, when the surface of the crystal is alloyed with a thin layer of various metals (indium, gallium, aluminum, gold, silver, etc.). The influence of the surrounding medium on the kinetics of the drop in photoconductivity is studied. In the enriching mode and with alloying of the surface with indium, the kinetics of photoconductivity are strongly elongated and the decay time is increased by 10^2-10^4 times, reaching several hours.

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USSR

AZIMKHODZHAYEV, Kh. E., Golynnaya, G. I., Poluprovodn. Tekhn. i Mikroelektronika. Resp. Mezhved. Sb. [Semiconductor Technology and Microelectronics. Republic Interdepartmental Collection], No 4, 1970, pp 5-10 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, 1970, Abstract No 10B88, by T. R.)

Memory elements with these characteristics, capable of operating at room temperature can be made. Possible mechanisms explaining the conditions under which this anomalously long relaxation time of quasi-dark conductivity arises are discussed. Two illustrations, 19 biblio. refs.

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UDC 615.779.9:582.288

USSR

ASKAROVA, S. A., KHODZHIBAYEVA, S. M., and AZIMKHODZHAYEVA, M. N.,
Department of Microbiology, Academy of Sciences Uzbek SSR

"The Effects of Polyene Antibiotics on the Production of Toxic Substances by Verticillium Dahliae Fungus"

Tashkent, Uzbekskiy Biologicheskiy Zhurnal, No 5, 1971, pp 60-61

Abstract: The toxin which is secreted by Verticillium dahliae fungus and which causes wilt of cotton and other plants is composed of several fractions, the most toxic one being the brown pigment. Polyene antibiotics obtained from Actinomycetes neutralize that toxin. Antibiotic 2,949 reduces the activity of the various fractions without suppressing production. Antibiotics 18-80 and 18-45 inhibit both the activity and production of all fractions. The best results are obtained with a mixture of all three antibiotics which totally inactivates the V. dahliae toxin. Cotton plants treated with the mixture develop no wilt.

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Plant Pathology

USSR

UDC 632.4:633.11:577.15

AZIMOV, A. S., All Union Order of Lenin and Order of the Red Banner of Labor Institute of Selection and Genetics

"The Effect of Gamma Irradiation on Wheat Resistance to Smut and Stem Rust"

Tashkent, Uzbekskiy Biologicheskiy Zhurnal, No 4, 1971, p 73

Translation: Ionizing radiation is now widely used by plant breeders to increase the resistance of plants to various diseases. We used it to induce phenotypic changes in plant resistance during the year of exposure and to study the residual effect in the first seed generation. We used seeds of the soft winter wheat varieties Odesskaya 3 and Odesskaya 16 and the winter durum wheat variety Michurinka. Dry seeds were irradiated 3 days before planting with Co^{60} gamma-rays at 1,000, 5,000, 10,000, and 15,000 r and at a dose rate of 400 r/min. Nonirradiated seeds were the control. Field experiments were carried out for two years on a phytopathology test plot with artificial infection. In the experiments with smut, the seeds were irradiated and then exposed to Tilletia tritici spores collected from a local population. In the variations with stem rust, the seeds were irradiated and then planted in a rust nursery. During the booting stage the plants were infected with spores of Puccinia graminis race 21 at the rate of 10 mg of

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AZIMOV, A. S., Uzbekskiy Biologicheskiy Zhurnal, No 4, 1971, p 73

spores per m^2. The experiments were performed six times.

Injury by smut was assessed by counting the healthy and diseased ears, while the degree of injury caused by stem rust was determined from Peterson's international scale. In the experiments with the residual effect of gamma irradiation, the offspring were sown the following year without being irradiated. The 2-year study showed that shoots of the experimental plants irradiated at 1,000, 5,000, and 10,000 r were the same as in the control, but were more sparse at 15,000 r. Low doses of radiation intensified growth and the absolute weight of the seeds harvested increased by 1 to 1.5 g. After irradiation at 5,000 and 10,000 r the susceptibility of wheat to smut decreased substantially.

The incidence of stem rust after irradiation decreased sharply in all the experimental variations except when the 15,000 r dose was used. At 5,000 and 10,000 r the disease rate was almost half that in the control.

The residual effect of irradiation in reducing the incidence of wheat smut and stem rust was insignificant. For example, in the experiment with smut, the disease rate among seeds of the 1965-1966 harvest (not irradiated before

USSR

AZIMOV, A. S., Uzbekskiy Biologicheskiy Zhurnal, No 4, 1971, p 73

planting) was 23.0% in the variation with the 5,000 r dose, 26.0% with the 10,000 r dose, and 26.3% in the control.

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USSR UDC 65.012.012.2.622.276

AZIMOV, Corresponding Member (sic) B. A., RAGIMOV, Sh. M., and EMINOV, I. T.

"Using Mathematical Programming Methods for a Problem in the Control of a Water-Oil Contact"

Baku, Doklady Akademii Nauk Azerbaydzhanskoy SSR, No 2, 1973, pp 11-16

Abstract: Taken as a whole, the problem of controlling the displacement of a water-oil contact involves insuperable mathematical difficulties. In this theoretical article, therefore, the authors consider the problem under the condition that the shift of the apertures is known. It is assumed that the horizontal layer is uniform, the viscosities of the oil and water are equal, and that the motion of the liquid in the layer obeys the linear law of filtration under water-pressure conditions. The problem is formulated in the following way: at every moment in time, the output of the operating apertures is chosen such that the nonviscosity function ε is brought as close to zero as possible at all points. The method of its solution is to determine the norm for ε as a function of the polar coordinate angle θ in the sense of a normalized

USSR

AZIMOV, B. A., et al, Doklady Akademii Nauk Azerbaydzhanskoy SSR, No 2, 1973, pp 11-16

spatial functional and then minimize the norm of the nonviscosity function under the limitations specified. This article is based on an earlier book (B. A. Azimov, et al, Primeneniye matematicheskikh metodov i EVM k resheniyu nekotorykh zadach razrabotki neftogazovykh mestorozhdeniy -- Applications of Mathematics and the Electronic Computer in the Solution of Some Problems of Development of Oil and Gas Sources -- Baku, 1969).

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Beryllium

USSR UDC: 549.623.3+546.45(575.16)

AZIMOV, P. T.

"Beryllium-Containing Axinite From Pegmatized Granite-Aplites of Ziaetdinian Mountains (West Uzbekistan)"

Tashkent. Uzbekskiy Geologicheskiy Zhurnal, no 5, 1979, pp 21-23

Abstract: Axinite occurs rather infrequently in Uzbekistan rocks and is still not clearly understood as a mineral. It was discovered in one of the pegmatized portions of the granite-aplite vein. Chemical composition (wt%) of axinite is: 41.60 SiO_2, 1.20 Fe_2O_3, 10.80 FeO, 2.80 MnO, 15.70 Al_2O_3, 0.62 BeO, 18.2 CaO, 0.38 MgO, 7.10 B_2O_3, 0.12 Na_2O, 0.70 K_2O, 0.52 H_2O, 99.82% Σ . Its specific weight (determined by microvolumetry) is 3.34 g/cm3, and the refractory indices are Ng--1.6970; Np--1.6835; Nm--1.6930. The considerable amount of FeO (10.8%) identifies axinite with ferro-axinite. The presence of beryllium in axinite as borosilicate is explained by its isomorphous form in the crystalline structure of the mineral. The presence of an aluminum atom in the fourth coordination in

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AZIMOV, P. T., Uzbekskiy Geologicheskiy Zhurnal, no 5, 1970, pp 81-93

the structure of axinite suggests the heterovalent isomorphism of beryllium with aluminum. The granitoids of West Uzbekistan are characterized by accessory beryllium and boron mineralization ensuing from the geochemical specialization for the above elements as pointed out by earlier research. The discovery of axinite provides new support for this consideration.

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1/2 026 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--CHARACTERISTICS OF SOME INDICES OF FAT LIPID METABOLISM IN EXPERIMENTAL TRICHODESMOTOXICOSIS -U-
AUTHOR-(02)-ABDULLAYEV, N.KH., AZIMOV, R.K.

COUNTRY OF INFO--USSR

SOURCE--PATOLOGICHESKAYA FIZIOLOGIYA I EKSPERIMENTAL'NAYA TERAPIYA, 1970, VOL 14, NR 3, PP 34-36
DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

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CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/1930 STEP NO--UR/0396/70/014/003/0034/0036

CIRC ACCESSION NO--AP0127331
UNCLASSIFIED

2/2 026 UNCLASSIFIED PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0127331
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPERIMENTS WERE PERFORMED ON RATS POISONED WITH THE SEEDS OF A PLANT, TRICHODESMA. THERE WAS A GRADUAL REDUCTION OF TOTAL LIPID, BETA-LIPOPROTEID AND PHOSPHOLIPID CONTENT IN THE SERUM. CHOLESTEROLIFYING FUNCTION OF THE LIVER WAS ALSO DISTURBED. NO FATTY DYSTROPHY OF THE LIVER DEVELOPED. FACILITY: LABORATORIYA EKSPERIMENTAL'NOY GASTROENTEROLOGII INSTITUTA KRAYEVOY MEDITSINY, TASHKENT.

UNCLASSIFIED

USSR

UDC: 539.171.017

AZIMOV, S. A., DAUDOV, Z. Kh., KOCHETKOV, G. A., KRATENKO, Yu. P., LEVKOVICH, S. G., Tashkent State University imeni V. I. Lenin

"Fluctuations of the Number of Particles, and Transition Effects in Electron-Photon Showers in Lead at Energies Greater Than 20 GeV"

Moscow, Izvestiya Akademii Nauk SSSR: Ser. Fizicheskaya, Vol 37, No 7, Jul 73, pp 1354-1355

Abstract: Experimental data are presented on fluctuations of the number of particles at depths of 1.5, 4, 11, 15, 19, and 23 radiation units in electromagnetic cascades at energies greater than 20 GeV for four energy intervals. The lead-brass transition curve is given for five brass layers located at a depth of 9.9 radiation units.

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Molecular Physics

USSR UDC 539.12

AZIMOV, S. A., Academician of the Uzbek SSR Academy of Sciences, GULAMOV, K. G., SVECHNIKOVA, L. N., CHERNOVA, P. L., and CHERNOV, G. M., Physical-Technical Institute imeni S. V. Starodubtsev, Uzbek SSR Academy of Sciences, Tashkent

"The Coherent Generation of Particles by Protons with an Energy of 50 Gev on the Nuclei of an Emulsion"

Moscow, Doklady Akademii Nauk SSSR, Vol 212, No 6, 1973, pp 1323-1325

Abstract: This article gives values of cross-sections in 1-, 3-, and 5-beam channels of proton coherent reactions with an intermediate energy of 50 Gev and traces the energy relationships of the cross-section of 3-beam channels. Inelastic coherent reactions were selected from a total of 2568 meters of primary tracks on the assumption that the longitudinal impulse transmitted to the target nucleus is less than or equal to $\frac{1}{R_A}$, where R_A is the radius of the nucleus. These events thus yield a significantly stronger angular collimation of secondary particles than the pn-interactions among which they occur. Considering those events with one secondary charged particle in which the sine of the particle departure angle was greater than 0.015, values for N_{coh}

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AZIMOV,S. A., et al., Doklady Akademii Nauk SSSR, Vol 212, No 6, 1973, pp 1323-1325

were found: $N_{coh}^{(3)} = 65 \pm 11$, $N_{coh}^{(5)} = 10 \pm 4$, $N_{coh}^{(1)} = 41 \pm 10$. Of course, these are only lower bounds, since there are single-beam reactions among the events with a sine less than 0.015. Assuming roughly that the distribution of charged particles is the same in events with one and three particles, a value of $N_{coh}^{(1)}$ approximately equal to 55 ± 15 is obtained. Comparison of the authors' results with those of other studies for 3-beam channels shows that the cross-section for proton coherent reactions increases significantly less rapidly than for ion reactions. This is of significant interest for verifying various theoretical models of diffraction coherent particle generation.

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USSR

UDC 530.145

AZIMOV, S. A., ARUSHANOV, G. G., and PIRMATOV, I. I.

"Stationary Values of the Differential Cross Section and Overlap Functions for High Energies"

Tomsk, Izvestiya Vysshikh Uchebnykh Zavedeniy -- Fizika, No 8, 1973, pp 73-79

Abstract: The extremal values obtained earlier (G. G. Arushanov, ZhETF, No 51, 1402, 1966; S. A. Azimov, et al., Izv. vuzov SSSR, Fizika, No 4, 103, 1970) for the differential cross section of elastic scattering in the diffraction cone region are generalized to the case of other angles. They are reduced to a form convenient for a comparison with experimental values which shows that all the external values are close to the experimental value. Similar results were also obtained in the case of binary inelastic reactions and overlap functions. When deriving the sample values for the overlap functions, one should preferably begin with the ordinary expansion in Legendre polynomials and not the integral representation, since the condition of unitarity in this representation, generally speaking, has a complicayed form . In the case of small transmitted pulses in which the formulas can be obtained comparatively easily in both representations, they are comparable.

1/1

USSR UDC: 621.315.52

AZIMOV, S. A., SULTANOV, N. A., ISLAMOV, L., and NAGMATOV, R. N.

"Infrared Quenching of the Photoconductivity of Silicon With a Nickel Impurity"

Leningrad, Fizika i Tekhnika Poluprovodnikov, No 9, September 1973, pp 1837-1839

Abstract: The purpose of this paper is to supplement the data already gathered concerning Ni energy levels in silicon by measuring the long-wave limits of the photoconductivity-quenching spectral distribution. The nickel was diffused in the silicon from a sputtered layer at a temperature of 1200° C in air for 10-30 hours. The initial silicon was n-type monocrystalline with an electron concentration of $2 \cdot 10^{13}/cm^3$ to $8 \cdot 10^{13}/cm^3$. After the diffusion, the specimens maintained their n conductivity but their resistivity increased to the order of 10^2-10^3 ohms·cm. The spectral distribution measurements were conducted with the SPM-2 monochromator with a LiF prism, using d-c and at 80° K, and a constant white light was used to observe the infrared quenching of the photoconductivity. The spectral distribution curve is presented. A model for the

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UDC: 621.315.52

AZIMOV, S. A., et al, Fizika i tekhnika poluprovodnikov, No 9, September 1973, pp 1837-1839

mechanism of the quenching is proposed, together with an explanatory diagram.

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USSR

UDC 537.226+537.311.33/:/537+535

AZIMOV, S. A., LUTFULLAYEV, the late A., MIRZABAYEV, M., and KHAYRULLAYEV, SH., Physicotechnical Institute imeni S. V. Starodubtsev, Academy of Sciences Uzbek SSR

"Effect of Single Strain on Resistivity of Hexagonal Silicon Carbide"

Tashkent, Izvestiya Akademii Nauk Uzbekskoy SSR, Seriya Fiziko-Matematicheskikh Nauk, No 3, 1973, pp 52-54

Abstract: For purposes of studying the effect of mechanical compression stress (along the $[11\bar{2}0]$, $[10\bar{1}0]$, and $[0001]$ axes) on the electric resistance of commercial α-SiC (6H) single crystals of the n and p types, the authors studied the effect of single elastic strain on the resistivity of hexagonal silicon carbide at nitrogen, room, and higher temperatures. The results of longitudinal motional resistance measurements show that the variation pendence of motional resistance with temperatures in the region where acoustic phonon and impurity ion scattering prevails is close to the dependence of $\Delta\rho(\chi)/\rho(0)$ on T^{-1} and is similar to the dependence obtained for Ge, Si. This indicates that the motional resistance of hexagonal silicon carbide

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USSR

AZIMOV, S. A., et al., Izvestiya Akademii Nauk Uzbekskoy SSR, Seriya Fiziko-Matematicheskikh Nauk, No 3, 1973, pp 52-54

samples in the impurity conduction region is due to the effect of charge carrier redistribution between conduction band valleys.

Preliminary studies established that in samples with $\rho > 1$ ohm·cm the absolute motional resistance coefficient increases with an increase in the temperature and declines appreciably with a decrease in the temperature to 77° K. This is apparently due to the change in the activation energy of the impurities and, hence, in the free carrier concentration as a function of χ and T. The shape of the dependence of $\Delta\rho/\rho$ on χ and T for samples with p-type conduction evidently indicates the degeneracy of the valence band of silicon carbide at the extreme point.

2/2

USSR

AZIMOV, Sh. A., AHLEZINGER, M. I.

"Algorithm for Determination of the Contour of a Scanned Liver by Computer"

Vopr. Kibernetiki [Problems of Cybernetics -- Collection of Works], No 51, Tashkent, 1972, pp 94-100 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V718, by the authors).

Translation: An algorithm based on the theory of linear programming and particularly the theory of convex programming is suggested for determination of the true boundaries of an organ being studied. The mathematical foundation is presented for modes of smoothing and elimination of background noise from useful signal, as well as printer output of results.

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USSR

UDC: 621.315.592

AZIMOV, S. A., YUNUSOV, M. S., TURSUNOV, N. A., and SULTANOV, N. A.
S. V. Starodubtsev Physicotechnical Institute, Tashkent

"Some Characteristics of Silicon With Palladium Doping"

Leningrad, Fizika i Tekhnika Poluprovodnikov, No 8, 1972, pp 1438-1441

Abstract: The purpose of the experiments described in this paper is to acquire more detailed information concerning the electrophysical characteristics of silicon doped with palladium. Subject specimens were n-type silicon monocrystals with resistivity of 1-2000 ohm·cm and p-type silicon with a resistivity of 10-10,000 ohm·cm, having a dislocation density of $10^4/cm^2$ and an oxygen content of $1-5\cdot10^{16}$ atoms/cc. The palladium with which the crystals were doped was 99.998% pure, and the doping was done by diffusion saturation in the interval of 1100-1250° C and in the time intervals of 30 minutes to 20 hours in quartz ampoules in an atmosphere of pure argon. The effect of the palladium on the electrical characteristics of the silicon, the solubility of the palladium in the silicon, and the effect of thermal processing were investigated.

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USSR

UDC: 621.315.592

AZIMOV, S. A., et al, Fizika i tekhnika poluprovodnikov, No 8, 1972, pp 1438-1441

Various characteristics of the doped crystals are plotted. The authors express their thanks to G. Yuldashev for his assistance with the experiments.

2/2

USSR

UDC 539.171.017

AZIMOV, S. A., MYALKOVSKIY, V. M., NURITDINOV, Kh., RASULKULOV, M. S., ABDULLAYEV, A. M., BEYSEMBAYEV, R. U., GAVRILIN, Ye. V., TALIPOV, D. A., MULLAZHONOV, E. Zh., TILLAYEV, T., RAKHMANOV, Zh., UMEROV, R., ULIMAYEVA, F. A., KHEN, E., YULDASHBAYEV, T. S., Institute of Nuclear Physics of the Academy of Sciences Uzbek SSR

"Study of the Characteristics of High-Energy Interactions of Pions and Nucleons"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol. 36, No. 8, Aug 72, pp 1626-1631

Abstract: Experimental data obtained at the Kum-Bel' High-Altitude Station of the Physicotechnical Institute of the Academy of Sciences Uzbek SSR are reported. The station is 3200 m above sea level. The setup contains three series of wide-gap spark chambers, with effective areas of 2 m^2 placed above and below the target. The Cerenkov spectrometer with total absorption and an ionization calorimeter with an area of 10 m^2 were used to measure the primary energy E_0. Up to the present time experimental data obtained over 630 hours of operation of the device have been processed, with a high-voltage pulse being supplied to the electrodes of the spark chambers. Showers with an energy of > 200 Gev generated in the target were selected for analysis. The following ratio was obtained for the number

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AZIMOV, S. A., et al., Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 36, No 8, Aug 72, pp 1626-1631

of primary charged N_c and neutral N_n particles: $N_c/N_n = 2.3 \pm 0.3$; this shows that the proportion of charged particles is ~34% of all nuclear active particles, thus making it possible to study pion-nuclear collisions by comparing the characteristics of the interaction of charged and neutral primary particles. A weak functional dependence between the inelasticity coefficient $\langle K_{\pi^0} \rangle$ and the atomic number of the target nucleus and a strong functional dependence between this coefficient and the nature of the primary particles were obtained for interactions of hadron with $E_0 > 200$ Gev. $\langle n_s \rangle$ is almost a logarithmic function of E_0. The average multiplicity in the interaction of pions with neutrons in paraffin is identical within the experimental limit. A considerable azimuthal effect was observed for the angular distribution of secondary particles. The azimuthal effect has its greatest value for showers with n_s = 8-15, or a multiplicity close to average.

2/2

USSR

UDC: 539.172.12

AZIMOV, S. A., ARIFKHANOV, U. R., GULYAMOV, M., ISLAMOV, B. I., ISKHAKOV, T., FAYZULLAYEV, U. I., ERGASHOV, E., Institute of Nuclear Physics, Academy of Sciences of the Uzbek SSR

"The Reaction $^{7}Li(pn)^{7}Be$ at $E_p = 17.5$ MeV"

Moscow, Izvestiya Akademii Nauk SSSR: Seriya Fizicheskaya, Vol 36, No 1, Jan 72, pp 173-174

Abstract: The neutron spectrum of the reaction $^{7}Li(pn)^{7}Be$ is studied on a proton beam in the U-150 cyclotron at the Institute of Nuclear Physics at the Academy of Sciences of the Uzbek SSR, using a multichannel, fast-neutron, time-of-flight spectrometer. The measurements were made at a proton energy of 17.5 MeV. The experimental data enabled the authors to distinguish neutron groups n_0 and n_1 corresponding to the ground and excited states of ^{7}Be ($E^* = 0.43$ MeV). Differential cross sections of the reaction are presented, with formation of neutron groups corresponding to the ground and excited states ($E_1^* = 0.43$ MeV and $E_2^* = 4.55$ MeV). All curves have a

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AZIMOV, S. A. et al., IAN SSSR: Ser. Fiz., No 1, 1972, pp 173-174

diffraction structure with a first maximum at $\theta = 0°$ for n_0 and n_1 and a first maximum at $\theta \approx 20°$ for group n_2. The curves for n_1 and n_2 are antisymbatic. Three figures, bibliography of six titles.

2/2

USSR

UDC: none

ABDUZHAMILOV, Sh., AZIMOV, S. A., SAIDKHANOV, N. Sh., and CHUDAKOV, V. M.

"Coherent Diffraction Generation of Ions by Protons in Photoemulsive Nuclei"

Moscow, Yadernaya Fizika, vol. 15, No 2, 1972, pp 300-312

Abstract: This paper is a study of reactions of the type $p + A \rightarrow A + N + n\pi$, in which a nucleus with an atomic number of A does not vary in charge and is not excited: i.e., coherent diffraction generation of ions by protons takes place. The results of experiments in which a stack of Ilford K5 emulsions was irradiated by neutrons with an impulse of 20.8 Gev/s, and 3550 m of primary proton traces were scanned at an average rate of 1 m/hr, are given in tabular form and analyzed. The irradiation of the emulsion in a strong magnetic field of about 180 kilogauss permitted measurement of secondary particle impulses with good accuracy. Angular correlations are investigated through the use of the Lorentz-invariant azimuthal angles, and a mechanism for the reaction given above is developed. The authors express their gratitude to M. I. Podgoretskiy for his comments.

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USSR

UDC 539.12

AZIMOV, S. A., GULYAMOV, U. G., GULYAMOV, K. G., PROZOROVA, YE. I., and CHERNOV, G. M., Institute of Nuclear Physics, Academy of Sciences Uzbek SSR

"Diffraction Coherent Particle Production in Interactions of 17 Gev Pions With Emulsion Nuclei"

Tashkent, Izvestiya Akademii Nauk Uzbekskoy SSR, Seriya Fiziko-Matematicheskikh Nauk, No 5, 1971, pp 70-75

Abstract: The article presents experimental data on inelastic coherent particle production reactions in collisions of 17.2-Gev pi-mesons with photoemulsion nuclei, based on extensive statistical material obtained with the aid of angular screening tests devised by the authors. Three-pronged and five-pronged interactions with a zero number of heavily ionizing particles were screened for measurements. The mean free path in the photoemulsion was found to be 53^{+7}_{-5} m for three-pronged coherent reactions, $3.8^{+11.5}_{-1.6}$ km for five-pronged events. The azimuthal angular distribution in coherent particle production reactions was studied.

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USSR UDC 530.145

AZIMOV, S. A., ARUSHANOV, G. G.

"Van Hove Overlapping Function and Elastic Dispersion at High Energy Levels"

Tomsk, Izvestiya VUZ--Fizika, No. 10, 1971, pp 25-32

Abstract: The van Hove overlapping function G(t) is defined as describing the contribution of nonelastic processes to the imaginary part of the elastic dispersion amplitude. By using a model of uncorrelated jets, van Hove found that function to be of the exponential form $G(t) = \sigma_{in} e^{\beta t}$. The purpose of this article is to investigate and clarify the validity of this form of the function in view of the fact that the model on which it is based does not result in quantitative agreement with experiments. To do this, the authors proceed in reverse: i.e., they find the form of the function from the unitary condition by substituting into the latter the experimentally established value for the diffraction peak, as was done in an earlier article by the same authors (Izvestiya VUZ SSSR, Fizika, No. 5, 1971, p 85). In the present article, a detailed investigation is made of the elastic

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AZIMOV, S. A. et al, Izvestiya VUZ--Fizika, No 10, 1971, pp 25-32

dispersion corresponding to the modified version of the function $G(t) = ae^{\alpha t} - be^{\beta t}$ obtained by the authors, and the van Hove model is discussed. Members of the Tashkent V. I. Lenin State University, the authors conclude by thanking V. K. Usharov for his interest in the work.

2/2

USSR UDC 539.171.017

ABDULLAYEV, A. M., AZIMOV, S. A., BEYSEMBAYEV, R. U., BELITSKIY, M. T., MULLIZHANOV, E. ZH., MYALKOVSKIY, V. M., TALIPOV, T. A., TILLAYEV, T., UMEROV, R., KHEN, E., and YULDASHBAYEV, T. S.

"Study of Characteristics of Inelastic Interactions of Cosmic-Ray Particles in the 10^{11} to 10^{12}-ev Energy Range"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 35, No 10, Oct 71, pp 2065-2068

Abstract: Experiments that were performed at the high-altitude test station (3,200 m.) at Kum-Bel' in Uzbekistan are described. The purpose of the experiments was to investigate the angle of arrival and the energy characteristics of interactions of pions and nucleons with light and heavy nuclei at 2 x 10^{11} to 2 x 10^{12} ev and the mechanism of generating muons at energies above 2 x 10^{12} ev. Equipment consisted of spark chambers, located above and below the target (paraffin wax, carbon, and iron), a Čerenkov spectrometer of full absorption, and an ionization calorimeter. This complex method of measurements was found convenient for use in various modes of operation. A detailed description of various parts of the installation and their disposition is given in the paper. 1/3

USSR

ABULLAYEV, A. M., et al., Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 35, No 10, Oct 71, pp 2065-2068

Joint operation of ionizing calorimeters and spark chambers is normally difficult because of the need for high voltage on the calorimeter electrodes, combined with the time lag of the input pulse from the spark chambers, amounting to over 20 microseconds. This difficulty was avoided in the present experiments by storing pulses in memory cells, with the subsequent input of a high-voltage pulse of about 120 kv. Operation was controlled by a master-pulse, prior to which all parts of the equipment were kept inoperative.

Results of 200 hours of the joint operation of a Čerenkov spectrometer and ionizing calorimeter, with graphite used as the target, have been processed so far. For analysis, showers with energy above 1.5×10^{11} ev were selected, 130 of them having been observed. The ratio of charged to neutral nucleons were determined and, from it, the fraction of charged pions of the total nucleus-active stream of particles. The inelastic coefficient for the formation of π^0-mesons was computed from the experiments related to the interaction of neutral particles with nuclei of graphite.

It is concluded that the combination of ionizing calorimeter with Čerenkov spectrometer of full absorption for the simultaneous determination of energy of primary particles made it possible to determine the fraction of

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ABULLAYEV, A. M., et al., Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 35, No 10, Oct 71, pp 2065-2068

energy supplied by the ionizing particles $\tilde{\eta}$, since a Čerenkov spectrometer measures only the energy emitted by relativistic particles. It was found that for the mean energy of primary particles of 350 Gev the energy part lost on nuclear fissions in the spectrometer, with CCl_4 as the light emitter, is $\tilde{\eta}$ = 0.25,

CSO: 1862-W

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UDC: 539.294

AZIMOV, S. A., MUMINOV, R. A., NURKUZIYEV, G., KHAKNAZAROVA, Sh., Physico-technical Institute imeni S. V. Starodubtsev, Academy of Sciences of the UzbekSSR

"Reactance Properties of Germanium Diodes With Double Injection"

Tashkent, IAN Uzbekskoy SSR, Seriya Fiziko-Matematicheskikh Nauk, No 3, 1971, pp 40-42

Abstract: The paper presents the results of research on the reactance properties of diodes with double injection (P^+-N-N^+ structures) made on the basis of relatively pure germanium single crystals of N-type with initial impurity concentration of $5 \cdot 10^{12}$/cc. The injection contacts on these specimens were made by alloying; the area of the PN junction was determined by the cross section of the crystal -- 0.4×0.4 mm^2; the distance between opposite contacts was 0.4 mm. The reactance properties of the diodes were measured on a bridge circuit at a temperature of 77°K. The frequency of the small alternating signal varied from 1 to 45 MHz. The current-voltage characteristic as well as curves showing capacitance as a function of forward biasing current at various frequencies and curves for conductance as a function of current at various frequencies are given.

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AZIMOV, S. A., et al., IAN UzSSR, Ser. Fiz.-Mat. Nauk, No 3, 1971, pp 40-42

The results show that inductive reactance in germanium diodes with rectifying contacts under the given conditions is due to change in the lifetime of the charge carriers. An increase in carrier lifetime causes injection over a considerable length of crystal and formation of an electron--hole plasma throughout the base region. The resultant plasma has constant inductance in the 10-30 ma-current region at frequencies from 10 to 30 MHz. Three figures, bibliography of seven titles.

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USSR

AZIMOV, S. A., BETER, YE. V., GULYAMOV, U. G., and LEVIN, A. YA., Institute of Nuclear Physics, Academy of Sciences Uzbek SSR

"Inelastic Pion-Nucleon Interactions With High Multiplicity and a Model of Single-Pion Exchange"

Moscow, Yadernaya Fizika, Vol 14, No 1, Jul 71, pp 240-246

Abstract: The authors propose a model of a single-pion exchange for the inelastic collision $\pi + N \rightarrow n\pi + N$ with any (odd) number of secondary pions. They find the spectrum of the effective mass of the system of secondary pions in an analytical form that is convenient for computation. They compare the results of the computation with the available experimental data for different energies and find a good agreement between the suggested model and the experiment. The authors give 2 variations of the model which they describe mathematically and support with several illustrations of a graphic nature. The article contains 5 figures and 7 bibliographic entries.

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USSR

UDC 539.171.015

AZIMOV, S. A., and ARUSHANOV, G. G., Tashkent State University imeni V. I. Lenin

"The Contribution of Statistical Processes to Elastic Scattering"

Tomsk, Izvestiya Vysshikh Uchebnykh Zavedeniy, Fizika, No 6, 1971, pp 17-21

Abstract: In recent years rather precise experimental data have been obtained on the angular distribution of high-energy hadrons in elastic scattering covering a wide band of angles. It has been found that the differential scattering cross sections, forward and back, have peaks, and the size of the forward peak exceeds that of the backward peak by several orders of magnitude. It is also found that the ratio of these peaks with increase in energy grows approximately as the cube of the energy in horsepower. Furthermore, the angular distribution near 90° is almost isotropic and depends greatly on the energy. In this article the authors investigate the sensitivity of statistical theory as it applies to selecting the dependence of transparency on distance in an optical model. They show that with an exponential density distribution obtained in field theory, the statistical scattering is negligibly small in comparison with the corresponding diffraction scattering. They strictly summarize the alternating series encountered in the theory. They also mention certain difficulties which arise in com-

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AZIMOV, S. A., and ARUSHANOV, G. G., Izvestiya Vysshikh Uchebnykh Zavedeniy, Fizika, No 6, 1971, pp 17-21

paring theory and experiment. The article contains 10 bibliographic entries.

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USSR UDC 539.12.01

AZIMOV, S. A., Academician of the Uzbek SSR Academy of Sciences, and ARUSHANOV, G. G., Institute of Nuclear Physics of the Uzbek SSR Academy of Sciences

"Several Possible Properties of Weak Interactions at High Energies"

Moscow, Doklady Akademii Nauk SSR, Vol 198, No 5, 11 Jun 71, pp 1040-1042

Abstract: Existing theory of weak interactions, based on the assumption of locality of the interaction and the possibility of using perturbation theory, leads to cross sections of effects depending on quadractic energy in the system of the center of inertia of colliding particles. A number of fundamental problems in the theory depend on the answer to the question: up to what energies may a growth take place in the cross sections of weak interactions, and what is the maximal value that these cross sections may attain. The authors show in this article that these values probably may not be very large.

The authors go on to discuss how they arrive at such a conclusion, using mathematical formulas to clarify their position. The article contains a bibliography of 1 title.

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USSR

AZIMOV, S. A., et al.,

"Coherent Interactions of Pions with Emulsion Nuclei at Energies of 17 and 45 BEV"

Moscow, Yadernaya Fizika, Jul 71, pp 137-149

Abstract: The article concerns a description of a method for selecting coherent interactions of high-energy particles with complex nuclei that is based on analysis of the two-dimensional distributions of the angular evaluation of the longitudinal and transversal momenta, transfered to the target nucleus, in various interaction groups. With this method the mean free paths are obtained for the coherent reactions $\pi^- \rightarrow 2\pi^- \pi^+$ and $\pi^- \rightarrow 3\pi^- 2\pi^+$ on the emulsion nuclei at the pion energy of 17 GeV: $52.8^{+6.5}_{-5.2}$ m and $3.8^{+11.5}_{-1.6}$ km respectively; and at the energy of 45 GeV the mean free paths are found to be $34.0^{+5.5}_{-4.1}$ m and 195^{+108}_{-52} m.

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USSR

UDC 539.171.016

AZIMOV, S. A. and ARUSHANOV, G. G., Institute of Nuclear Physics, Uzbek SSR Academy of Sciences

"Oscillating Character of the Differential Cross Section Outside the Diffraction Peak"

Tashkent, Izv. Akad Nauk Uzbek SSR, ser Fiz-Mat Nauk, No 2, 1971, pp 53-56

Abstract: This article gives the formula for the scattering amplitude outside the diffraction peak which has an oscillating character. The authors find that previous results which are useful for finding the variation of partial amplitudes with energy can not be used to analyze the fine structure of the differential cross section. The authors give equations which prove that in the differential cross section there are local minima and maxima and that the oscillation period with growth in energy under certain conditions tends to zero and is approximately 1 rad. GeV/s under others. The article contains 23 equations and 8 bibliographic citations.

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USSR

UDC 539.171.016

AZIMOV, S. A. and ARUSHANOV, G. G., Tashkent State University imeni V. I. Lenin

"Behavior of the Van Hove Overlap Function Near the Diffraction Peak"

Tomsk, Izvestiya VUZ, Fizika, No 5, 71, pp 84-88

Abstract: The authors show that the condition of unitarity and the shape of the experimentally found diffraction peak determine the dependence of the Van Hove overlap function on the impulse transmitted in the region of the diffraction cone. The result is expressed by a linear combination of two exponents rather than by the ordinarily used single one. If the law governing the inelastic process is known, then theoretically on the basis of unitarity the corresponding elastic scattering can be computed, and vice versa. By substituting numerical values for the total cross section, the authors find that in the Van Hove model the diffraction picture must be produced by terms which correspond to the inelastic processes; they find this to be in complete accord with the diffraction scattering. The new results which the authors find may substantially change the solution to the condition of unitarity relative to the imaginary part of the amplitude for the given overlap function, which appears as a nonhomogeneous term in the integral equation.

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AZIMOV, S. A., et al, Izvestiya VUZ, Fizika, No 5, 71, pp 84-88

Finally, the authors briefly discuss the behavior of the functions E(t) and G(t) in the nonphysical region of the transmitted impulses $t \geq 0$. The article contains a bibliography of nine titles.

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USSR

ANZON, Z. V., et al, Institute of Nuclear Physics, Academy of Sciences, Kazakh SSR, Alma-Ata; BOZOKI, G., et al, Central Research Institute of Physics, Budapest; DALKHAZHAV, N., et al, High-Energy Laboratory, Joint Institute of Nuclear Research, Dubna; BABETSKIY, Ya., et al, Laboratory of High-Energy Physics, Institute of Nuclear Research, Polish Academy of Sciences, Krakow; MASLENNIKOVA, N. V., TRET'YAKOVA, M. I., CHERNYAVSKIY, M. M., Physics Institute imeni P. N. Lebedev of the Academy of Sciences, USSR, Moscow; ALEKSEYEVA, K. I., Scientific Research Institute of Nuclear Physics, Moscow State University, Moscow; CHERNEV, Kh., TODOROV, P. T., Institute of Nuclear Physics, Academy of Sciences of the People's Republic of Bulgaria, Sofia; TUVDENDORZH, D., SHARKHI, D., CHADRAA, V., Institute of Physics and Mathematics of the Academy of Sciences, Mongol People's Republic, Ulan-Bator); AZIMOV, S. A., et al, Institute of Nuclear Physics Academy of Sciences, Uzbek SSR, Tashkent

"Coherent Generation of Particles by π^--Mesons With Momenta of 45 and 60 Gigaelectron-Volts/Sec on the Basis of Photoemulsion Nuclei"

Moscow, Izvestiya Akademii Nauk SSR. Seriya Fizicheskaya, No 9, 1970, pp 1938-1943

Abstract: In the present report are presented data concerning the coherent generation of π-mesons by π^--mesons at 45 and 60 gigaelectron-volts/sec, obtained by means of nuclear photoemulsion by the laboratories of a number of institutes

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USSR

ANZON, Z. V., ET AL, Izvestiya Akademii Nauk SSR. Seriya Fizicheskaya, No 9, 1970, pp 1938-1943

of the Soviet Union and countries of the Soviet bloc. The joint study was organized by the Photoemulsion Committee of the Joint Institute of Nuclear Research. The preliminary results of this project were presented at the International Conference on Elementary Particles in Lund in June 1969 and at the International Conference on Cosmic Rays in Budapest in August 1969. The path value of the coherent generation of three and five charged particles is obtained from the distribution of charged particles and the angular characteristics of secondary particles on the basis of multiplicity. Comparison of the path value with the corresponding values at lower and higher energies shows a decrease of the run (and, consequently, an increase of the coherent particle-generation cross section) as the energy increases. 5 figures, 11 bibliographic entries.

USSR

ANZON, Z. V., et al, Institute of Nuclear Physics, Academy of Sciences, Kazakh SSR, Alma-Ata; BOZOKI, G., et al, Central Research Institute of Physics, Budapest; DALKHAZHAV, N., et al, High-Energy Laboratory, Joint Institute of Nuclear Research, Dubna; BABETSKIY, Ya., et al, Laboratory of High-Energy Physics, Institute of Nuclear Research, Polish Academy of Sciences, Krakow; MASLENNIKOVA, N. V., TRET'YAKOVA, M. I., CHERNYAVSKIY, M. M., Physics Institute imeni P. N. Lebedev of the Academy of Sciences, USSR, Moscow; ALEKSEYEVA, K. I., Scientific Research Institute of Nuclear Physics, Moscow State University, Moscow; CHERNEV, Kh., TODOROV, P. T., Institute of Nuclear Physics, Academy of Sciences of the People's Republic of Bulgaria, Sofia; TUVDENDORZH, D., SHARKHI, D., CHADRAA, V., Institute of Physics and Mathematics of the Academy of Sciences, Mongol People's Republic, Ulan-Bator); ASIMOV, S. A., et al, Institute of Nuclear Physics Academy of Sciences, Uzbek SSR, Tashkent

"Coherent Generation of Particles by π^--Mesons With Momenta of 45 and 60 Gigaelectron-Volts/Sec on the Basis of Photoemulsion Nuclei"

Moscow, Izvestiya Akademii Nauk SSR. Seriya Fizicheskaya, No 9, 1970, pp 1938-1943

Abstract: In the present report are presented data concerning the coherent generation of π^--mesons by π^--mesons at 45 and 60 gigaelectron-volts/sec, obtained by means of nuclear photoemulsion by the laboratories of a number of institutes 1/2

USSR

ANZON, Z. V., ET AL, Izvestiya Akademii Nauk SSR. Seriya Fizicheskaya, No 9, 1970, pp 1938-1943

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USSR

UDC 539.12

AZIMOV, S. A., Academician of the Academy of Sciences Uzbek SSR, GULYAMOV, U. G., CHERNOVA, L. P., and CHERNOV, G. M., Institute of Nuclear Physics of the Academy of Sciences Uzbek SSR, Settlement of Ulugbek of Tashkent Oblast

"On the Reaction Mechanism for the Diffraction Generation of Pions by 20 Gev Protons"

Moscow, Doklady Akademii Nauk SSSR, Vol 192, No 6, 21 Jun 70, pp 1241-1243

Abstract: Diffraction dissociation reactions

$$p + \text{nucleus} \rightarrow p + \pi^+ + \pi^- + \text{nucleus} \qquad (1)$$

of protons with momentum 20.8 Gev/c on nuclei of a photographic emulsion exposed to a strong magnetic field (H = 180 koersted) are investigated. These reactions are of a type that have been studied in recent years and involve the interaction of high-energy particles with nuclei (coherent interactions) in which the target nucleus participates in the reaction as an entity, receiving only a small momentum and remaining in the ground state or undergoing a small collective excitation. Of reactions found in an effective length of 2.32 km of track, 404 stars were selected with three and four charged particles satisfying the necessary

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AZIMOV, S. A., et al, Doklady Akademii Nauk SSSR, Vol 192, No 6, 21 Jun 70, pp 1241-1243

criteria for the selection of NN-interactions. The kinematic characteristics were measured and the particles were identified for the great majority of secondary tracks. The momenta were measured with an accuracy of 10-15%. 62 stars with p-, π^+, and π^- particles in the final state were selected to distinguish the reactions (1). Of these, no signs of excitation of the nuclei were observed in 47 events (group 1). Also selected were 27 stars of the type $pp\pi^+\pi^-$, the total energy of the secondary particles in which was equal to the energy of the primary particles within the limits of the error. Reactions (1) are considered to be present among the events of group 1, and the remaining events (group 2) are considered as phonon. The distribution of longitudinal and transverse momenta for events of the first and second groups is plotted. Analysis shows the prominent participation of light nuclei of the emulsion in reactions (1) at this energy. Also noted is the similarity in the dynamics of pion and proton dissociation in the field of the nuclei at energies of approximately 20 Gev.

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USSR A UDC 539.126.34

AZIMOV, S. A., ARIPOV, R., GULYAMOV, U. G., LOZHKIN, O. V.

"Some Characteristics of the Formation of ^{8}Li Fragments With a π^{-}-Meson Energy of 45 Gigaelectron Volts"

Tashkent, Izvestiya Akademii Nauk Uz SSSR, Seriya Fiziko-Matematicheskikh Nauk, No 3, 1970, pp 52-55

Abstract: This paper contains the results of an experimental investigation of the reactions of formation of ^{8}Li fragments during interaction of π^{-}-mesons, the impulse of which is 45 giga-electron volts/second, with nuclei of an emulsion. The study of fragmentation in the very high-energy range is of interest in connection with certain hypotheses regarding the mechanism of these phenomena: the assumption of the effect of meson showers on the formation of fragments in nuclear splitting, the concept of shock waves in nuclear matter caused by primary particles, and the hypothesis of intranuclear reactions in clusters caused by cascade nucleons. In the experiment the method of nuclear emulsions was used to obtain maximum information about the characteristics of the formation of ^{8}Li fragments in nuclear 1/3

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AZIMOV, S. A., et al, Izvestiya Akademii Nauk Uz SSSR. Seriya Fiziko-Matematicheskikh Nauk, No 3, 1970, pp 52-55

splitting. Nuclear emulsions of the B-R type were irradiated by a beam of π^--mesons with an energy of 45 gigaelectron volts in the IFVE accelerator.

Investigation of the ionization characteristics of particles leaving T-type tracks in the emulsions demonstated that the B^8 nuclei in these tracks constitute 5 percent for AgBr target nuclei. Out of 306 T-type tracks in four cases there were two electron tracks at the point of decay of the fragment. The probability of formation of T-type tracks in split AgBr nuclei with $N_h > 7$ when considering the geometric corrections turned out to be 0.022 + 0.0014; the total cross section of formation of ^8Li from AgBr is (6.4)±2) millibarns; the cross section of formation of two fragments of ^8Li in one splitting is 0.1 millibarn and ^8Li from light nuclei (C, N, O) ~ 0.5 millibarns. A figure is presented showing the frequency of formation of ^8Li as a function of the number of beams N_h. Just as for lower energies the cross section of formation of ^8Li depends on the number of strongly ionizing particles in the split, and it

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USSR

AZIMOV, S. A., et al, Izvestiya Akademii Nauk Uz SSSR, Seriya Fiziko-Matematicheskikh Nauk, No 3, 1970, pp 52-55

increases with the number N_+. From the data it is noted that the generation of fragments is not connected with the number of relativistic particles. Comparison of the data obtained with the results of investigating ^{8}Li with lower energies of the incident particles (in the vicinity of $E > 10$ gigaelectron volts) reveals certain peculiarities of fragmentation in the given energy range: low variation of the total cross section of formation of ^{8}Li and practical constancy of the parameters determining the kinematic characteristics of ^{8}Li (anisotropy of the angular distribution, statistical parameters of the energy spectrum $\bar{E}$, $\bar{E}_0$, σ).

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USSR

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AZIMOV, S. A., BEYSEMBAYEV, R. U., MULLADZHANOV, E. ZH., CHUDAKOV, V. M., YUDASHBAYEV, T. S., Institute of Nuclear Physics, Academy of Sciences, Uzbek SSR

"Azimuthal Relations and Fireballs"

Moscow, Yadernaya Fizika, Vol 11, No 6, 1970, pp 1248-1254

Abstract: Azimuthal correlations are detected in nuclear interactions at energies of hundreds of Gev. From the point of view of a model of a single fireball, the cause of the correlations may be its formation and "rotation."

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USSR

AZIMOV, S. A., et al (Institute of Nuclear Physics, Uzbek Academy of Sciences)

"Study of pN-Interactions for E = 21 bev by a Method of Photoemulsions in a Strong Magnetic Field"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, September 1970, pp 1912-1916

Abstract: The general characteristics of 729 proton-nucleon interactions in an emulsion irradiated by protons with a 20.8 bev/sec pulse in a magnetic field with H = 180 koe are discussed. The angular distributions of the protons in a center-of-mass system in ph-interactions are asymmetrical "forward." The average probability of the charge exchange of nucleons in pN-interactions is equal to 0.38 $\pm$ 0.02 and is identical for pp and pn collisions. The distributions of pulses, transverse pulses, and the coefficients of inelasticity do not reveal any pecularities whatever varying continuously with changes in the multiplicity.

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USSR

UDC 539. 71.016

AZIMOV, S. A., and ARUSHANOV, G. G., Tashkent State University imeni V. I. Lenin

"On the Steady-State Value of the Differential Cross Section for Elastic Scattering"

Tomsk, Izvestiya VUZ, Fizika, No 4, 1970, pp 103-108

Abstract: Steady-state values are considered for the differential cross section and its derivatives in terms of the transmitted pulse t for given values of the total interaction cross section σ_t, the total elastic scattering cross section σ_{el}, and the forward scattering amplitude. Since high energies are being considered, it was more convenient to use an integral representation for the amplitude instead of the expansion of the scattering amplitude in Legendre polynomials. Lower limits are obtained for the differential elastic scattering cross sections on the basis of the most general considerations and for its derivatives in terms of the transmitted momentum at the point t = 0 at high energies. The problem is reduced to finding the steady-state value or extremum of a certain functional. The results are expressed in terms of total cross sections that are measurable in experiment.

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USSR UDC: 539.107.45

AZIMOV, S. A., AYDINOVA, D. M., MUMINOV, R. A., YAFASOV, A. Ya., Physico-technical Institute imeni S. V. Starodubtsev, Academy of Sciences of the UzbekSSR

"Concerning Certain Characteristics of Si(Li) Nuclear Emission Detectors"

Tashkent, Izvestiya Akademii Nauk UzSSR, Ser. Fiz.-Mat. Nauk, No 1, 1973, pp 59-62

Abstract: Research is done on diffusion-drift, spectrometric detectors based on a p-i-n structure made from p-type single-crystal silicon with and without dislocations and with various conductivities. The parameters of the detectors are compared, and optimum conditions are determined for using such detectors and realizing their advantages. The thickness of the working section was 2-6 mm, area 1.25-2.5 cm^2, and minimum dead layer approximately 12 nm. It is shown how dislocations affect the nuclear physics characteristics of the detectors. Optimum operating conditions are determined for similar detectors used as spectrometers for beta-rays, soft gamma-rays, and x-rays.

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1/2 016 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--STRUCTURE OF ULTRATGRAFTING WITH STYRENE OR VINYLTOLUENE -U-

AUTHOR-(04)-RAZIKOV, K.KH., ISAMUKHAMEDOVA, I.I., USMANOV, KH.U., AZIZOV, U.A.
COUNTRY OF INFO--USSR

SOURCE--UZB. KHIM. ZH. 1970, 14(1), 35-8

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TOPIC TAGS--NATURAL FIBER, STYRENE, CELLULOSE, VINYL COMPOUND, TOLUENE, METHYL METHACRYLATE, ACRYLATE, EPOXY RESIN, QUARTERNARY AMMONIUM SALT, GRAFT POLYMERIZATION/(U)ED5 EPOXY RESIN

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CIRC ACCESSION NO--AP0123627

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ELECTRON AND OPTICAL MICROSCOPY OF THE TITLE POLYMERS SHOWED THAT THE INCREASE OF GRAFTING GREATER THAN OR EQUAL TO 21.5PERCENT CAUSES STRUCTURAL CHANGES OF THE COTTON FIBERS. POLYSTYRENE OR POLY(VINYLTOLUENE) CHAINS SWELL IN ME METHACRYLATE, BU METHACRYLATE, OR EPOXY RESIN ED-5, USED IN MOUNTING OF THE SAMPLES FOR MICROSCOPY AND SEPG. THE FIBERS. HOWEVER, THE GRAFTED CELLULOSE CONTG. GREATER THAN OR EQUAL TO 13.4PERCENT GRAFTED CHAINS DOES NOT SWELL OR DISSOLVE IN QUATERNARY AMMONIUM BASES.

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TITLE--AZAINDOLE DERIVATIVES. XXI. SYNTHESIS OF 3-SUBSTITUTED 4-AZAINDOLES -U-

AUTHOR--YAKHONTOV, L.N., AZIMOV, V.A.

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CIRC ACCESSION NO--AP0102485

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE COURSE OF A STUDY OF CYANOMETHYLATION, BROMINATION, NITRATION AND THE MANNICH REACTION WITH 4,AZAINDOLE (I) (R EQUALS R PRIME1 EQUALS H) (IA) A NO. OF NEW 3,SUBSTITUTED,4,AZAINDOLES WERE SYNTHESIZED. THE INFLUENCE OF AN ACETYL RADICAL AT THE 1 POSITION ON THERE ACTIVITY OF IA WAS ALSO STUDIED. THUS, 0.92 G PARAFORMALDEHYDE AND 6.8 G ME SUB2 NH.HCL WAS ADDED TO A SOLN. OF 3.17 G IA IN 86 ML BUOH, AND THE MIXT. REFLUXED 15 MIN TO GIVE 4.62 G I (R EQUALS H, R PRIME1 EQUALS CH SUB2 NME SUB2) (II), M. 127-8.5DEGREES (C SUB6 H SUB6). THE INFLUENCE OF TEMP., REACTION TIME, AND REAGENT RATIO ON THE COURSE OF THE ABOVE MANNICH REACTION WAS STUDIED; IA, II, AND III FORMED WERE SEPD. FROM EACH OTHER BY CHROMATOG. ON AL SUB2 O SUB3; ET SUB2 O ELUTED I AND II SUCCESSIVELY, AND III WAS THEN REMOVED BY MEOH. TO A STIRRED SOLN. OF 2 G IA IN 25 ML DIOXANE WAS ADDED DROPWISE 3.12 G BR IN 50 ML DIOXANE AT 15DEGREES TO GIVE 4 G I.HBR (R EQUALS H, R PRIME1 EQUALS BR) (IV.HBR) M. 243.5-4.5DEGREES; IV M. 228DEGREES (ALC.). IA (2 G) WAS SLOWLY ADDED WITH STIRRING IN SMALL PORTIONS TO 20 ML HNO SUB3 (D. 1.52) AT MINUS 15DEGREES, AND THE MIXT. STIRRED 1 HR AT 0DEGREES TO GIVE 2.73 G BRIGHT YELLOW I (R EQUALS H, R PRIME1 EQUALS NO SUB2), M. 348DEGREES (HCONME SUB2). A MIXT.

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ABSTRACT/EXTRACT--OF 6.33 G IA, 5.45 G 96DEGREES KCN, 4.46 G 40PERCENT FORMALIN, 1.49 G MECO SUB2 K, 1.75 G AL SUB2 O SUB3, AND 40 ML 85PERCENT ETOH WAS HEATED WITH STIRRING 4 HR IN A STAINLESS STEEL AUTOCLAVE AT 120DEGREES AND INITIAL PRESSURE 10 ATM (N) TO GIVE 3 G III, M. 292-3DEGREES (HCONME SUB2), AND A PRODUCT WHICH WAS DRIED IN VACUO OVER P SUB2 O SUB5 AND REFLUXED 6 HR WITH 100 ML ALC. HCL TO GIVE 5.2 G I (R EQUALS H, R PRIME1 EQUALS CH SUB2 CO SUB2 ET) (V), M. 142-4DEGREES (C SUB6 H SUB6). V (2.5 G) AND 30 ML 17PERCENT HCL WAS REFLUXED 6 HR TO GIVE 2.34 G I.HCL (R EQUALS H, R PRIME1 EQUALS CH SUB2 CO SUB2 H), M. 207-8DEGREES (DECOMPN.). V (2 G) AND 3 G LIQ. NH SUB3 IN A 55 ML STAINLESS STEEL AUTOCLAVE WAS HEATED 5 HR ON A WATER BATH TO GIVE 1.3 G I (R EQUALS H, R PRIME1 EQUALS CH SUB2 CONH SUB2) (VI), M. 209-11DEGREES (ISO-PROH). TO A REFLUXING SOLN. OF 1.57 G LIALH SUB4 IN 100 ML THF WAS ADDED A SOLN. OF 1.34 G VI, AND REFLUXING CONTINUED 6 HR TO GIVE 1.45 G I.2HCL (R EQUALS H, R PRIME1 EQUALS CH SUB2 CH SUB2 NH SUB2), M. 257-8DEGREES. IA (8 G) WAS MIXED WITH 50 ML AC SUB2 O (EXOTHERM) AND THE MIXT. KEPT OVERNIGHT GAVE 8.7 G I.HOAC (P EQUALS AC, R PRIME1 EQUALS H) (IB.HOAC), M. 77-8DEGREES, AND 3.48 G IB, B SUB10 128DEGREES, M. 77-8DEGREES; MIXED M.P. WITH IB.HOAC 55-8DEGREES. BY THE INTRODUCTION OF AN AC GROUP IN THE 1 POSITION IN IA, ITS REACTIVITY WAS GREATLY REDUCED. THUS, IB IN THE MANNICH REACTION GAVE ONLY 28PERCENT OF I (R EQUALS AC, R PRIME1 EQUALS CH SUB2 NME SUB2), AND ON BROMINATION, ONLY 27PERCENT I (R EQUALS AC, R PRIME1 EQUALS BR) (VII), M. 124-5DEGREES (C SUB6 H SUB6). VII, HOWEVER, WAS OBTAINED IN 88.6PERCENT YIELD FROM IV.

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ABSTRACT/EXTRACT--THUS 1 G IV WAS DISSOLVED IN 5 ML AC SUB2 O BY HEATING, AND THE SOLN. LEFT OVERNIGHT TO GIVE 1.27 G VII.HOAC, M. 117-18DEGREES, FROM WHICH THE BASE VII WAS OBTAINED. MICROFICHE OF ABSTRACT CONTAINS GRAPHIC INFORMATION.

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"Chichibabin Reaction in the Series of Aminopyridines, Azaindoles, and Azaindolines"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 9, Sep 73, pp 1232-1239

Abstract: In contrast to 3- and 4-aminopyridines the 2-isomers can be aminated with sodium amide to yield 2,6-diaminopyridine. Among the dimethylaminopyridines the 3- and 4-isomers are the most reactive ones in the Chichibabin reaction. 2-Dimethylaminopyridine can be converted with difficulty to 2,6-diaminopyridine in a reaction with sodium amide, the first step being the replacement of the dimethylamino radical with the amino group. Azaindoles and azaindolines do not react in the amination reaction. Under the influence of sodium amide 1-phenyl-5-azaindole opens its pyrrole cycle forming 3-vinyl-4-phenylaminopyridine.

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